Steelhead Annual Operation Plan

For

Lower Snake River Fish and Wildlife Compensation Plan

Grande Ronde and Imnaha Basin

For the Period of

January 1 – December 31, 2025

Prepared by:

Oregon Department of Fish and Wildlife

Confederated Tribes of the Umatilla Indian Reservation

Nez Perce Tribe

For

Lower Snake River Compensation Plan

USFWS

and

Bonneville Power Administration

Final

12-18-24

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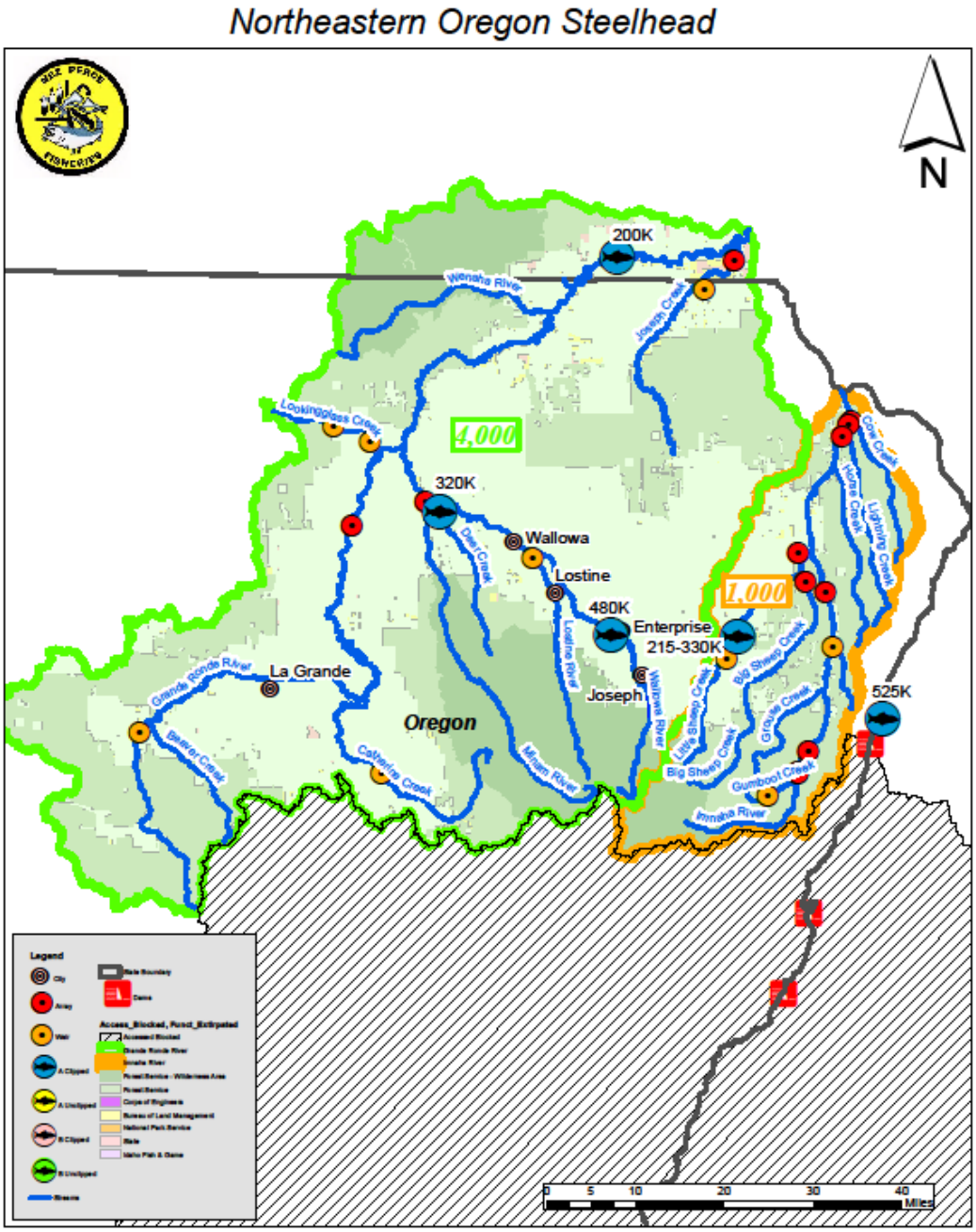


Figure 1. Steelhead hatchery facilities and release locations in Northeast Oregon.

Table 1. Steelhead smolt release goals by release location.

Smolt Release Program	Rearing Facility	Release Site	Parent Stock	Annual Smolt Release Goal
LSRCP / ODFW	Wallowa/Irrigon	Wallowa Acclimation Pond Early	Wallowa	400,000
	Wallowa/Irrigon	Wallowa Acclimation Pond Late	Wallowa	160,000
	Total			**560,000**
	Wallowa/Irrigon	Big Canyon Acclimation Early	Wallowa	240,000
	Total			**240,000**
	Wallowa/Irrigon	Little Sheep Acclimation	Imnaha	215,000
	Total			**215,000**
			Grand Total	**1,015,000**

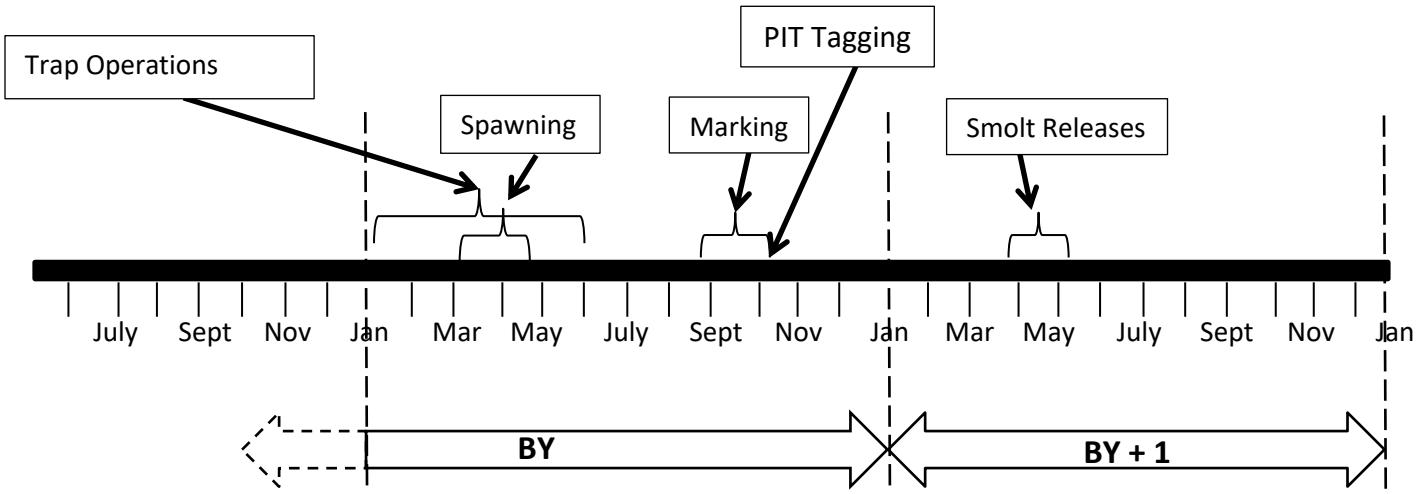


Figure 2. Steelhead production timeline

Table 2. BY2024 steelhead rearing goals by mark type.

Hatchery	Release Site	Stock	Rearing Goals by Mark Type				PIT Tags		
			Date	Total[a]	Mark Type		Total[b]	Funding Source	
					AD	AD CWT		CSS	LSRCP
Irrigon	Wallowa Acc. 1st Release	Wallowa	Nov. 2024	400,000	300,000	100,000	7,200	2,800	4,400
Irrigon	Wallowa Acc. 2nd Release	Wallowa	April, 2025	160,000	110,000	50,000	3,600	1,400	2,200
Irrigon	Big Canyon Acc. Release	Wallowa	March, 2025	240,000	140,000	100,000	6,800	2,800	4,000
Grande Ronde Basin Totals				**800,000**	**550,000**	**250,000**	**17,600**	**7,000**	**10,600**
Irrigon	Little Sheep Accl. Pond	Imnaha	Feb. 2025	215,000	190,000	25,000	15,000	7,000	8,000
Imnaha Basin Totals				**215,000**	**190,000**	**25,000**	**15,000**	**7,000**	**8,000**
Grand Total				**1,015,000**	**740,000**	**275,000**	**32,600**	**14,000**	**18,600**

[a] *Numbers in the "Total" column may not equal the current inventory shown in Table 3.*

[b] *PIT tag release numbers will not be finalized until June 2024, and will be available by release group at:* http://www.cbr.washington.edu/dart/query/pit_releases

Table 3. BY2024 steelhead rearing and releases.

Hatchery	Release Site	Stock	Inventory AFTER Marking			Release Goals		Projected Smolt Releases			% of goal
			Date	Number	Size (FPP)	Number	Size (FPP)	Start Date	Number	Transfer Size (FPP)	
Irr/Wal	Wallowa Accl. Pond - 1st Release	Wallowa	11/01/2024	371,927	12.1	400,000	5.0	4/1/2025	370,000	10.0	92.5%
Irr/Wal	Wallowa Accl. Pond - 2nd Release	Wallowa	11/01/2024	164,332	34.9	160,000	5.0	4/16/2025	163,000	5.5	101.8%
Irr/Wal	Big Canyon Accl. Pond - Release	Wallowa	11/01/2024	251,115	27.1	240,000	5.0	4/8/2025	250,000	5.5	104.1%
Totals				**877,374**		**800,000**					
Irr/Wal	Little Sheep Accl. Pond	L. Sheep	11/01/2024	231,588	22.0	215,000	4.5	4/1/2025	230,000	5.0	106.9%
Grand Total				**1,018,962**		**1,015,000**			**1,013,000**		

Table 4. BY2024 steelhead transport, M&E sampling and release schedule.

Transfer Date (Tentative)	M&E Sampling[a]	Release Date (2025)	Stock	From Ponds	To	Number	Est. Pounds	CWT tag codes
Nov. 12-14	Mar. 31[b]	April 1-3	5624	3*,5*,7,9,11	Wallowa Upper Acc.	203,967	21,470	092379 092380
Nov. 12-14	Mar. 31[b]	April 2-3	5624	4*,6*,8,10	Wallowa Lower Acc.	167,918	20,477	092377 092378
Feb. 18-20	March 28	April 1-30	2924	17,18,19,20,21*,22	Little Sheep Acc.	231,000	46,200	092479
March 11-13	Apr. 4	April 8-10	5624	23*,25*,27 (split)	Big Canyon Upper Acc.	108,000	19,636	092480 092481
March 11-13	Apr. 4	April 7-10	5624	24*,26,27 (split)	Big Canyon Lower Acc.	108,000	19,636	092482
March 11-13	Apr. 4	April 7	5624	28*	Big Canyon Chinook Pd.	34,500	6,272	092483
Apr. 8-9	Apr. 11	April 14-24	5624	13,14*,15,16*	Wallowa Lower Acc.	163,500	29,727	092484 092485
					Total	**1,016,885**	**163,418**	

** Denotes Coded Wire Tag (CWT) Pond*

[a] *Sampling is for pre-release unless otherwise footnoted.*

[b] *Periodic length/weight sampling to monitor the November transfer growth rates will occur monthly from January to March.*

[c] *Sex ratio determination.*

5. BY2025 steelhead spawning.

Trap Site	Egg Destination	Stock	Spawning Dates	Predicted Return Natural	Predicted Return Hatchery	Wild Fish Needed for Spawning		Hatchery Fish Needed/ Available[a] for Spawning		
				Total	Total	Males	Females	Males	Females	Total
Wallowa	Irrigon	Wallowa-Production	Estimated first spawn (Wed.) March 1. Spawn each Wednesday for seven weeks or until goals are met.	N/A	2,131	None – Hatchery Only		181	186	367
L. Grande Ronde Angler-Caught	Irrigon	Wallowa-Fall Brood						22	18	39
Big Canyon	Irrigon	Wallowa	N/A	54	1,257	Broodstock not collected at Big Canyon				
Little Sheep	Irrigon	Little Sheep	Estimated first spawn (Tues) March 14. Spawn each Tuesday for six weeks or until goals is met.	103	911	4	6	51	49	110

30% of the total Wallowa stock may be spawned from angler-*caught broodstock. Angler caught fish will only be spawned with other angler caught fish. Sex ratios for angler caught fish are preliminary.*

Trap Site	Egg Destination	Stock	Fecundity	Egg Take Goal	Egg Transfer Goal
				Green Eggs	Eyed Eggs
Wallowa	Irrigon	Wallowa – Production	5,000	965,000	868,500
L. Grande Ronde Angler-Caught	Irrigon	Wallowa – Fall Brood	5,000	45,000	40,500
Little Sheep	Irrigon	Little Sheep	5,000	275,000	247,500

Table 6. BY2025 Little Sheep steelhead broodstock collection targets.

	Natural					Hatchery			
Week Ending (Fri)	Average % by Week	Males	Females	Total		Average % by Week	Males	Females	Total
14-Mar	0.6%	0	0	**0**		2.5%	1	1	**2**
21-Mar	1.9%	0	0	**0**		6.6%	3	3	**6**
28-Mar	6.5%	0	1	**0**		8.8%	4	4	**8**
4-Apr	9.8%	1	1	**1**		13.0%	7	6	**13**
11-Apr	13.0%	1	1	**2**		14.5%	7	8	**15**
18-Apr	14.8%	1	1	**2**		16.4%	9	8	**17**
25-Apr	16.5%	1	1	**2**		15.6%	8	8	**16**
2-May	14.6%	0	1	**2**		11.9%	7	6	**13**
9-May	11.9%	0	0	**1**		6.6%	3	3	**6**
16-May	7.3%	0	0	**0**		2.7%	1	1	**2**
23-May	3.1%	0	0	**0**		1.4%	1	1	**2**
Total		4	6	10			51	49	100

***** *No management of the proportion of hatchery/natural fraction at natural adult run sizes <100. Assuming a predicted natural return of 103 fish, pass nine hatchery fish for every one natural, and cease passage of hatchery fish after reaching 157 total adults of the 250 adult target above the weir to spawn naturally in Little Sheep Creek.*

Table 7. BY2025 production planning

Stock	HAT[1]	Pond	# Fish	LBS	F/LB[2]	Transfer Location	Approx Transfer Date	Approx Release Date[3]	Marks and Tags
5625	IR	3	42,000	4,200	10.0	Wallowa Upper	Mid-November	Early April	25K ADCWT, 17K AD, 1100 PIT LSRCP, 700 PIT CSS
5625	IR	4	42,000	4,200	10.0	Wallowa Lower	Mid-November	Early April	25K ADCWT, 17K AD, 1100 PIT LSRCP, 700 PIT CSS
5625	IR	5	42,000	4,200	10.0	Wallowa Upper	Mid-November	Early April	25K ADCWT, 17K AD, 1100 PIT LSRCP, 700 PIT CSS
5625	IR	6	42,000	4,200	10.0	Wallowa Lower	Mid-November	Early April	25K ADCWT, 17K AD, 1100 PIT LSRCP, 700 PIT CSS
5625	IR	7	42,000	4,200	10.0	Wallowa Upper	Mid-November	Early April	42K Ad Only
5625	IR	8	42,000	4,200	10.0	Wallowa Lower	Mid-November	Early April	42K Ad Only
5625	IR	9	42,000	4,200	10.0	Wallowa Upper	Mid-November	Early April	42K Ad Only
5625	IR	10	42,000	4,200	10.0	Wallowa Lower	Mid-November	Early April	42K Ad Only
5625	IR	11	42,000	4,200	10.0	Wallowa Upper	Mid-November	Early April	42K Ad Only
5625	IR	12	42,000	4,200	10.0	Wallowa Lower	Mid-November	Early April	42K Ad Only
5625	IR	23	42,000	7,636	5.5	Big Canyon Upper	Mid-March	Mid-April	25K ADCWT, 17K AD, 1000 PIT LSRCP, 700 PIT CSS
5625	IR	24	42,000	7,636	5.5	Big Canyon Lower	Mid-March	Mid-April	25K ADCWT, 17K AD, 1000 PIT LSRCP, 700 PIT CSS
5625	IR	25	42,000	7,636	5.5	Big Canyon Upper	Mid-March	Mid-April	25K ADCWT, 17K AD, 1000 PIT LSRCP, 700 PIT CSS
5625	IR	26	42,000	7,636	5.5	Big Canyon Lower	Mid-March	Mid-April	42K Ad Only
5625	IR	27	42,000	7,636	5.5	Big Canyon Upper/Lower	Mid-March	Mid-April	42K Ad Only
5625	IR	28	42,000	7,636	5.5	Big Canyon Chinook	Mid-March	Mid-April	25K ADCWT, 17K AD, 1000 PIT LSRCP, 700 PIT CSS
5625	IR	13	42,000	7,636	5.5	Wallowa Lower	Early April	Late-April	25K ADCWT, 17K AD, 1100 PIT LSRCP, 700 PIT CSS
5625	IR	14	42,000	7,636	5.5	Wallowa Lower	Early April	Late-April	25K ADCWT, 17K AD, 1100 PIT LSRCP, 700 PIT CSS
5625	IR	15	42,000	7,636	5.5	Wallowa Lower	Early April	Late-April	42K Ad Only
5625	IR	16	42,000	7,636	5.5	Wallowa Lower	Early April	Late-April	25K ADCWT, 17K AD, 1100 PIT LSRCP, 700 PIT CSS

[1] *Hatchery abbreviations: IR – Irrigon Hatchery*

[2] *F/LB is the number of fish per pound at time of transfer.*

[3] *Release date is the approximate date of the first release.*

BY 2020, release year 2021 was first year for fall acclimations

Table 7 Continued. BY2025 production planning

Stock	HAT[1]	Pond	# Fish	LBS	F/LB[2]	Transfer Location	Approx Transfer Date	Approx Release Date[3]	Marks and Tags
2925-IM	IR	17	36,000	7,200	5.0	Little Sheep Acc. Pond	Late Feb	Early April	36K AD
2925-IM	IR	18	36,000	7,200	5.0	Little Sheep Acc. Pond	Late Feb	Early April	36K AD
2925-IM	IR	19	36,000	7,200	5.0	Little Sheep Acc. Pond	Late Feb	Early April	36K AD, 2000 PIT LSRCP, 1700 PIT CSS
2925-IM	IR	20	36,000	7,200	5.0	Little Sheep Acc. Pond	Late Feb	Early April	36K AD, 2000 PIT LSRCP, 1700 PIT CSS
2925-IM	IR	21	36,000	7,200	5.0	Little Sheep Acc. Pond	Late Feb	Early April	25K ADCWT, 11K AD, 2000 PIT LSRCP, 1800 PIT CSS
2925-IM	IR	22	36,000	7,200	5.0	Little Sheep Acc. Pond	Late Feb	Early April	36K AD, 2000 PIT LSRCP, 1800 PIT CSS

[1] *Hatchery abbreviations: IR – Irrigon Hatchery.*

[2] *F/LB is the number of fish per pound at time of transfer.*

[3] *Release date is the approximate date of the first release.*

Standard Operating Procedures

Steelhead (*Oncorhynchus mykiss*)

I. Summer Steelhead - Grande Ronde- Wallowa Stock

In 2017 the National Marine Fisheries Service issued a biological opinion that covers activities pursuant to operating and maintaining the steelhead programs in Northeast Oregon. The opinion can be found at: https://www.fws.gov/lsnakecomplan/Reports/ESA%20Compliance/Biological%20Opinions/NMFS_Final%20NEOR-SEWA%20Steelhead%20BO_07-11-2017.pdf

A. Production goals

B. Wallowa stock smolt release is 800,000 fish released at 5.0 fpp.

Allocations – Wallowa stock Production fish will be acclimated in two acclimation periods at the Wallowa Acclimation site and in one period at the Big Canyon Acclimation site.

C. Liberations

1. **Wallowa Acclimation:** Smolts are transferred from Irrigon to Wallowa Hatchery

   a. **First Acclimation** – Transferred in November and released after 4 to 5 months of rearing and acclimation.
      i. **Lower Acclimation Pond –** Screens are pulled on the release date. Remaining fish are forced out after 3 days.
      ii. **Upper Acclimation Pond –** Screens are pulled on the release date. Remaining fish are forced out after 2 days.

   b. **Second Acclimation** – Transferred in early April and released after 1-3 weeks of acclimation.
      i. **Lower Acclimation Pond** – The screens are pulled on the release date. Remaining fish are forced out after 10 days.

2. **Big Canyon Acclimation:** Smolts are transferred from Irrigon Hatchery to the Big Canyon acclimation ponds.

   a. **Acclimation** – Transferred in mid-March and released after 4 - 5 weeks of acclimation.
      i. **Lower Acclimation Pond** – Screens are pulled on the release date. Remaining fish are forced out after 2 days.
      ii. **Upper Acclimation Pond** – Screens are pulled on the release date. Remaining fish are forced out after 1 day.
      iii. **Chinook pond —** Screens are pulled and fish are forced out on the release date.
      iv. **3. Liberation Notifications**: ODFW (Harrod) will notify Bratcher, Keniry and Feldhaus (ODFW), and Putnam (IDFG) of steelhead releases.

D. **Trap Operations**

1. **Wallowa Trap**
   - **a**. **Period of Trap Operation** - Wallowa trap is installed in late January. Collections will continue until no fish are caught for 10 consecutive days.
   - **b. Trap/sorting Frequency** - Work trap Wednesdays with ODFW staff.
   - **c. Disposition of Trapped Fish**
     - **i. Marked** - Brood collection. Surplus fish are distributed to food banks, buried at Wallowa Hatchery and outplanted to Roulet Pond (50), Marr Pond (100) and Wallowa Wildlife Pond (70). Carcasses will also be frozen and later outplanted at locations identified by District Biologists. Stocked fish will be marked with 2-left opercle punches.
     - **ii. Unmarked -** Transport unmarked fish to the Wallowa River (Fish Hatchery Ln bridge) and release. Sampling shall include genetic punch (1 LOP), sex, length, scales, and scan for PIT tags.
     - **iii. Residual Steelhead** - Count and sample (fork length, sex, genetics, scan for PIT tag), take snouts from all CWT fish, and euthanize all marked fish. After smolts have been released from acclimation pond, continue sampling residuals greater than 305mm (12in).

2. **Big Canyon Trap**
   - **a. Period of Trap Operation** - The Big Canyon trap is installed in early-February or as winter conditions allow. Collections will continue until no fish are caught for 10 consecutive days. From initial start-up through April 30, the ladder is operated from Monday afternoon through Friday morning. After sorting on Fridays, the ladder remains closed through Monday afternoon to increase hatchery fish availability to anglers. Beginning May 1, the ladder remains open throughout the trapping operation.
   - **b. Trap/sorting/ Frequency -** Work trap weekly with a preference for Fridays.
   - **c. Disposition of Trapped Fish**
     - **i. Marked** – Possible brood collection. Surplus fish are distributed to food banks, outplanted as carcasses within the Grande Ronde River basin, buried at Wallowa Hatchery and outplanted to ponds within the Wallowa River basin or Roulet Pond near Elgin, at the discretion of the Wallowa and LaGrande Fish Districts. Outplanted fish are marked with 2-left opercle punches.
     - **ii. Unmarked** - Pass all fish above the weir in Deer Creek. Measure all released fish, identify sex, and mark with 1 LOP. Research staff will collect scales on up to 20 fish, scan for PIT tags, and save the punch for genetics.
     - **iii. Residual Steelhead** - Count and sample (fork length, sex, genetics, scan for PIT tag) weekly until first smolt release, take snouts from all CWT fish, and euthanize all marked fish. After smolts have been released from acclimation pond, continue sampling residual smolts greater than 305mm (12in).
     - **iv. Disposition of Fallback Fish** – Pass spawned-out live fish downstream.

E. Brood Collection

1. **Program Summary -** Approximately 410 adults are required to produce the base program of 800,000 smolts. Adult steelhead are collected at two facilities, Wallowa Hatchery on Spring Creek (Wallowa R) and Big Canyon Satellite on Deer Creek (Wallowa R).

   - **a. Broodstock Lines –** Two broodstock lines comprise the Wallowa Program, the 'Production' line and 'Fall Brood' line. The Production line originated from adult collections during spring at mainstem Snake River dams from 1976-1978 and from embryos at Pahsimeroi Fish Hatchery (Idaho) in 1979. The Fall Broodstock line was developed from Production line steelhead that were collected via angling from the Grande Ronde River during early October

2003-2006, spawned separately and differentially marked for release. Efforts will be made to express the desirable return characteristics associated with the fall broodstock line by incorporating adult steelhead into the broodstock that are caught by anglers between September and November from the Grande Ronde River near Troy, OR. The angler caught adults will be held at Wallowa Hatchery until spawning and will be spawned only with other angler caught fish. Angler caught progeny will comprise no more than 30% of smolt releases.

Prior to BY20, adult returns from the two broodstock lines were both spawned at Wallowa Hatchery but segregated at the trap by distinct ventral clips (Production = Adipose fin (AD) clip or AD clip + left ventral (LV), Fall Brood = AD clip + right ventral (RV)). Starting with BY20, ventral clips were discontinued in both broodstock lines prior to release. The two broodstock lines were then spatially segregated. The Production line was acclimated and released at Wallowa Hatchery, and smolts from the Fall broodstock group were acclimated and released at the Big Canyon Satellite facility. Starting in BY23, a decision was made to stop segregating these two broodstock sources.

b. Wallowa Hatchery – All Wallowa stock broodstock collection and spawning will take place at Wallowa Hatchery. However, Big Canyon may be used to collect broodstock if collections at Wallowa Hatchery are inadequate. All smolts will be acclimated and released at the Wallowa Hatchery and Big Canyon acclimation sites. All adipose fin (AD) clip fish will be available for broodstock with no consideration of ventral fin clips previously used to segregate broodstock sources, though some may be present through BY24. Adults are held at a 50:50 Male / Female ratio to meet spawning goals. In-season adult collection adjustments are made depending on mortality, spawning success, and contributions of angler-caught broodstock.

i. Angler-caught broodstock – Starting in BY 23, in an effort to promote the early return timing benefits associated with the now terminated fall broodstock program, the normal production groups will be supplemented with AD clipped steelhead caught by anglers between September and November near Troy, OR. Upon capture, these angler-caught fish are transferred to Wallowa Hatchery and held until spawning. The angler caught broodstock will be limited to ≤ 30% (117 fish) of total production but may be further reduced depending on holding capacity at Wallowa Hatchery and annual success of angler collections. No efforts will be made to provide visual differentiation of smolts produced from angler-caught broodstock vs the Production line.

F. Spawning Guidelines

1. **Wallowa First Spawn** – Early March.
2. **Expected Spawning Frequency** – Weekly on Wednesdays.
3. **Spawning Strategies**

a. Fish are spawned at a 1:1 ratio and loaded into incubation trays up to 2 females per tray. The angler caught fish will be spawned together in a 1:1 ratio, then eggs can be mixed with the production for incubation and rearing. Production eggs are represented from 6 egg takes (events). ODFW Fish District staff develops a number of fish to spawn related to Fish Research run estimates.

G. Incubation and Rearing

1. Green eggs are incubated at Wallowa Hatchery. Eyed eggs are transferred to Irrigon Hatchery and represent all egg takes.

2. Eggs are hatched and ponded at Irrigon Hatchery.
3. Fish are reared at Irrigon Hatchery until transfer to acclimation sites.
5. If excess occurs greater than expected, eggs can be culled (except for fall broodstock) and used for resident trout production, or ODFW will propose release location in a closed waterbody. Excess smolts will not be marked.
6. Continue parentage based tagging (PBT) sampling of spawners and expand to tracking egg lots at Wallowa and Irrigon hatcheries through release location including early upper (UAP) and lower (LAP) acclimation ponds, and late LAP at Wallowa Hatchery and Big Canyon ponds. See Appendix A for more detail.

II. Summer Steelhead - Imnaha Stock

In 2017 the National Marine Fisheries Service issued a permit which covers activities related to the production, monitoring, and evaluation of the Little Sheep Creek Summer Steelhead Hatchery Program. The permit has additional details on these activities, and can be found at:
https://www.fws.gov/lsnakecomplan/Reports/ESA%20Compliance/Permits/NMFS_Final%20Permit%2018032%20Little%20Sheep%20STH_07-25-2017.pdf

A. **Production goals** - Little Sheep smolt release is 215,000 fish at 4.5 fpp.

B. **Allocations** - Little Sheep fish are acclimated at the Little Sheep Creek satellite facility. The releases will occur in one acclimation period.

C. **Liberations - Little Sheep Acclimation:** Smolts are transferred from Irrigon Hatchery to Little Sheep Creek acclimation pond.

1. Smolts are volitionally released after a 5-8 week acclimation. Beginning in the first part of April, the screens are pulled and the fish are allowed to leave for a minimum of 28 days. In late April, the river conditions will be assessed and fish may be retained longer to coincide with higher flows. Conversely, staff will assess conditions and may perform an emergency release if, under their assessment, there is a threat to smolts on site from high water or debris flows.
Downstream rotary trap operators are notified if changes are made to the release date.

2. Liberation Notifications: ODFW (Harrod) will notify Bratcher, Keniry, and Feldhaus (ODFW), Simmons and Rumelhart (NPT), and Putnam (IDFG) of steelhead releases.

D. **Trap Operations**

1. Little Sheep Trap
a. **Period of Trap Operation** - The Little Sheep Creek trap is installed in late February. Collections continue until no fish are caught for 10 consecutive days.
b. Trap/sorting Frequency - Work trap Monday and Thursday.

c. Disposition of Trapped Fish
- **i.** **Marked** - Adults collected for broodstock, placed above the weir and marked with a 1-LOP, distributed to food banks, used for stream enrichment, or buried.
- **ii.** **Unmarked** -Adults collected for broodstock or placed above the weir and marked with a 1-LOP.
- **iii.** **Genetics tissue samples** - Tissue sample all wild and hatchery fish passed above the weir for genetic analysis by ODFW (for NOAA Fisheries).
- **iv.** **Residual Steelhead** – Count weekly until first smolt release. Euthanize and freeze all marked fish for research staff to sample (fork length, sex, genetics, scan for PIT tag) at

Wallowa Hatchery. After smolts have been released from acclimation pond, continue sampling residuals greater than 305mm (12in).

v. **Surplus –** Steelhead in excess of production or natural production needs above the weir are considered surplus. These fish will be killed and: 1) distributed to tribes and/or local food banks, 2) placed in Imnaha River tributaries for nutrient enrichment purposes, or 3) buried in a landfill. If IHNV prevalence ≥ 30% then nutrient enrichment would have to stop. Contact Neal Espinosa or Brian Simmons (NPT) for carcass availability.

vi. **Disposition of fall back fish**. Fallback (fish passed above the weir but fall back below the weir and recaptured) Little Sheep fish (1-LOP) will be released above the weir again.

vii. **Carcass Disposal** - Spawned fish not suitable for distribution can be placed in the stream for nutrient enhancement or buried in a landfill.

viii. **Strays** - All unidentified marked fish (e.g. RV only, maxillary clip) will be sacrificed.

E. Brood Collection

1. Broodstock Management guidelines - Approximately 126-137 adults are required to produce the base program of 215,000 smolts.
2. The guideline for the proportion of natural fish in the broodstock is as follows:
   a. At less than or equal to 100 natural returns, use 10% of natural run for broodstock
   b. At greater than 100 natural returns, use 10 natural fish plus 40% of the natural run greater than 100 for broodstock.
3. Remaining broodstock needs are comprised of hatchery adults.
4. Wild and hatchery adults are collected based upon weekly estimated run timing to the facility. ODFW Fish District Staff (Bratcher) will create a table to reflect all collections.
5. Little Sheep Creek – In season modification - The run size will be reviewed around April 1 and adjustment can be made for broodstock collections.
6. Continue parentage based tagging (PBT) sampling of spawners and document tracking with visuals (Appendix C)

F. Spawning Guidelines

1. **Little Sheep Satellite First Spawn** – Mid March.
2. **Expected Spawning Frequency** – Weekly on Tuesdays.
3. **Spawning Strategies**
   c. A 2 x 2 or 3 x 3 spawning matrix is utilized. A matrix includes at least one natural fish, whenever possible.
   d. When eggs have been fertilized, the embryos are combined into groups of three females. These groups are tracked.
   e. Note: Live spawn all wild males retained for broodstock, collect genetic tissue sample (1 LOP), and release above the weir.

G. Incubation and Rearing

1. Green eggs will be incubated at Wallowa Hatchery. Eyed eggs will be transferred to Irrigon Hatchery and represents all egg takes.
2. Eggs are hatched and ponded at Irrigon Hatchery.
3. Fish are reared at Irrigon Hatchery until transfer to acclimation sites.
4. Fish in excess of program needs will be reared to smolts and incorporated with the Little Sheep Creek release providing they total less than 236,500 (215,000 + 10%).

III. Monitoring and Evaluation

Summary: *We will determine and compare rearing performance, smolt condition, juvenile migration performance, and smolt-to-adult survival rates of steelhead released from the Wallowa Hatchery, Big Canyon, and Little Sheep facilities. For the Imnaha supplementation program, we will also evaluate the effects of hatchery releases on natural origin abundance. PIT tags are supplied by LSRCP and the Fish Passage Center to meet M&E objectives for both LSRCP and the Comparative Survival Study (CSS), respectively. PIT tags will be used to determine juvenile migration performance of release groups to Lower Granite Dam, are used to evaluate run timing performance of adult returns, and provide in season run forecasts. Smolt-to-adult survival and straying rates are determined by using CWT data for each release group. All fish will be AD clipped.*

A. Current Studies

1. Comparative Survival Study (for the Fish Passage Center, contact: Brandon Chockley), compares barging at Lower Granite vs. natural downstream migration (funded by BPA). For details, see: http://www.fpc.org/documents/CSS.html

2. Monitor effects of fall (November) transfer from Irrigon to Wallowa Hatchery beginning with brood year 2020 (release year 2021). Objective to provide a period of extended acclimation and rearing at lower densities, reduce transfer stress, and provide safer hauling conditions. Performance will be evaluated using standard monitoring methods with groups of PIT and CWT tags. Co-managers are also investigating the use of PBT marking/tagging for future performance evaluation. Collect monthly weight and length samples for the months of December through March. Relative Reproductive Success (RRS) of Imnaha stock – Reproductive success of hatchery and wild Imnaha adults passed above the weir to spawn naturally is evaluated using genetics run by NOAA Fisheries (contact: Ewann Bernston). All fish released above the weir and used for broodstock are sampled for genetics (funded by BPA). For details see Berntson et al. 2012 at: https://www.fws.gov/lsnakecomplan/Meetings/2012SteelheadProgramReviewSymposium.html

B. Work Conducted at Facilities

1. Irrigon Hatchery

- **a.** PIT tagging
  - **i.** Late September tagging – 18,600 LSRCP tags (10.6k Wallowa stock and 8k Imnaha stock), 14,000 CSS tags (7k Wallowa and 7k Imnaha stock).
  - **ii.** Ad + CWT retention checks – 550 per tag group, held in circulars for 30 d prior to checks.

2. Wallowa Hatchery

- **a.** Spawning
  - **i.** Wallowa stock – sample all adults. Measure FL, record fin clip, opercle punch, collect snouts on CWT'd fish, collect genetic tissue samples from all brood used in production for Matt Campbell's (Eagle Genetics Lab, ID) parentage based tagging study.

ii. Imnaha stock – sample adults that were spawned at Little Sheep Facility by hatchery staff the previous day – same sampling protocol as Wallowa stock except collect two genetic samples, one for the Eagle Genetics Lab and one for NOAA Fisheries (contact: Ewann Bernston)

b. Install 2 PIT tag antennas in adult ladder for duration of trapping.

c. Monthly length/weight samples to monitor growth of November transfers.

d. Pre-release sampling – for each unique release group, measure 100 FL (mm), 100 weights (g), 300 Ad-clip quality in each acclimation pond in each acclimation pond. Collect 10 genetic tissue samples in each acclimation pond (30 total – Wallowa stock) for NOAA Fisheries (contact: Ewann Bernston).

3. Big Canyon Facility

a. Trapping – assist hatchery staff with running adult trap (weekly), record number, fork length, fin clip, sex, scan for PIT tags, collect genetics and snouts on CWT adults and residuals, and save opercle punches (1LOP) on all wild fish passed above weir.

b. Fallbacks at weir – Assist with capture of fallbacks. Pass live fish downstream.

c. Pre-release sampling – Same procedure as at Wallowa Hatchery and collect up to 10 genetic tissue samples in each acclimation pond (20 total) for NOAA Fisheries (contact: Ewann Bernston).

d. Sampling to enumerate residuals in Deer Creek – mid to late July, using two block seines and a backpack electrofisher. Multiple pass depletion to estimate density of residual steelhead, sampling all salmonids at two sites. Count and measure (FL) by species, record origin (hatchery or wild) keeping each pass separate. Estimate number of age-0 *O. mykiss*, Chinook salmon,and Coho.

e. Use PIT tag antennas to monitor juvenile releases.

f. Install 2 PIT tag antennas in adult ladder for duration of trapping.

4. Little Sheep Creek Facility

a. Trapping – Hatchery staff scans all hatchery fish (Ad clip) for CWT and collect snouts on distribution days (Mondays). All residuals are saved for research staff.

b. Install 2 PIT tag antennas in adult ladder for duration of trapping.

c. Pre-release sampling – same procedures as Wallowa Hatchery, except collect 50 genetic tissue samples (Imnaha stock).

d. Sex ratio/smolt index at end of volitional release – estimate number left in pond, measure FL, sacrifice/examine 100 fish and determine gender – note if ripe. If > 70% male, outplant to farm ponds (up to 7,500), otherwise force out.

e. Genetic sampling for the Relative Reproductive Success study (contact: Ewann Berntson NOAA Fisheries) – in mid-August, collect fin clip samples from *O. mykiss* as follows: 20 age-0, 20 age 1+, all wild fish >150 mm FL (considered rainbow trout), and all hatchery (ad-clipped) residuals at 8 sites above the Little Sheep Creek Facility. Sites on Little Sheep Creek include Devils Gulch, Lightning Cr, Hayden Cr, Threebuck Cr, Rail Canyon, Corcoran property, McCully Cr, and Fergurson Cr.

f. Sampling to enumerate residuals in Little Sheep Creek – mid to late July, using two block seines and a backpack electrofisher. Multiple pass depletion to estimate density of residual steelhead, sampling of all salmonids at two sites. Count and measure (FL) by species, record origin (hatchery or wild). Estimate number of *O. mykiss* and Chinook salmon.

C. Creel Surveys

a. Lower Grande Ronde (GR) River (ODFW: 1 Oct – 31 Dec, WDFW: 1 Feb - 30 March, but will begin 1 Jan if feasible. – One creel surveyor conducts pressure counts, and interviews anglers between counts, recording angler hours fished, angler origin, number of steelhead adults kept, hatchery fish released, and wild fish released. Creeler samples harvested fish, scans for PIT tags and CWT, records fin clip, FL (mm), sex, and collects snouts on all CWT fish.

b. Wallowa River (1 Jan to 15 April) – starting with the 2024-25 return year, an e-creel survey design will be employed to increase accuracy and precision of harvest estimates and to sample a wider temporal range of the steelhead season. A significant amount of harvest typically occurs November through January and was previously not sampled due to staffing and funding logistics. The e-creel approach uses a mark- recapture of harvested steelhead tagged electronically to generate harvest estimates and thus, creel shifts will occur at times and locations we are most likely to observe harvest. Because an e-creel does not sample time like the traditional creel employed on the lower Grande Ronde River, one creel surveyor can opportunistically begin creel surveys earlier in the fall by checking flow conditions, PIT detections, and observed angling to target steelhead anglers. As the season progresses, creel shifts will be scheduled on a more permanent basis, up to 40 hours per week. Creel shifts will not occur when environmental conditions are such that harvest is unlikely to occur. At Rondowa (mouth of the Wallowa River) trail cameras were installed at access points (Bathtub Spring, Palmer Junction, and Smith Mountain) to record angler effort, and interviews at these points will help determine anglers from non-anglers. A rail bike, purchased by the region, will be used to efficiently survey areas historically difficult to access below Minam state park and at Rondowa. Data collection will remain the same as on the lower Grande Ronde.

c. Imnaha River (1 Feb to 15 April) – An e-creel survey will also be employed, targeting anglers at times and locations where the majority of harvest is occuring. Similar to the Wallowa fishery, significant harvest occurs in the fall and has not been captured in previous survey designs. Increases in flow, PIT detections, and a priori knowledge will be used to begin creel shifts in November and the number of shifts will increase as the season progresses. Shifts will not occur when environmental conditions are such that harvest is unlikely to occur. Creelers will collect the same data as on the Lower GR and Wallowa surveys. Pressure counts will not occur.

D. Adult Return and Juvenile Release Monitoring

1. CWT vs. PIT tag reconstruction of abundance, mortality, and life history traits throughout the run; Grande Ronde and Imnaha basin harvest.
2. Download PIT tag detections at dams and weirs for in-season run forecasts and run timing – detections at Bonneville and Lower Granite dams, Wallowa and Imnaha Rivers, Wallowa Hatchery, Big Canyon and Little Sheep Creek acclimation facilities.

E. Marking and Tagging

1. Ad-clip – August at Irrigon Hatchery in conjunction with CWT.
2. CWT - August at Irrigon Hatchery. Eleven 25k tag groups are represented.
    - **a.** November transfer – Wallowa Hatchery upper acclimation pond – First release (2 CWT groups).
    - **b.** November transfer – Wallowa Hatchery lower acclimation pond –First release (2 CWT groups).
    - **c.** Production – Wallowa Hatchery lower acclimation pond – Second release (2 CWT groups).
    - **d.** Big Canyon upper acclimation pond – (2 CWT groups).
    - **e.** Big Canyon lower acclimation pond (1 CWT group)

f. Big Canyon Chinook pond (1 CWT group)

g. Little Sheep production – Little Sheep acclimation pond – volitional release (1 CWT group).

3. CWT Recovery – Adult fish are scanned for CWTs using a tube detector or wand. If a tag is present, the snout is removed and placed in a bag with snout identification number. Snouts are sent to the ODFW Fish ID Lab in Clackamas for processing, typically in June.
4. PIT tag – All fish will be PIT tagged in late September at Irrigon Hatchery.

IV. Fish Health

Location	Sp.	Stock	Examination Category	Protocol	Comment
Irrigon Hatchery	StS	Wallowa (56) and Little Sheep (29)	Monthly & Preliberation	- Monitor health status of healthy fish from each stock - Examine subset of morts for disease using appropriate diagnostic methods - Establish disease status at preliberation exam with appropriate testing methods	Utilize best management practices and judicious antibiotic use to manage disease outbreaks as recommended by Fish Health Services and Fish Pathologist
Irrigon Hatchery	StS	56 or 29	Annual *Myxobolus cerebralis*	60 smolts that have been on the water supply for at least 6 months >180 days	Prefer using saved mortalities
Steelhead acclimation sites – WA, BI & LI	StS	56 & 29	Preliberation	Steelhead acclimated more than 3 weeks will be monitored as in monthly protocol above	Fish Health guidelines are that fish determined to be non-migrants (those with a sex ratio of >70% male) should not be stocked outside the Grande Ronde or Imnaha basins, respectively.
Wallowa Hatchery	Rb		Annual *Myxobolus cerebralis*	Need n = 60 *O. mykiss* from each water supply to be sampled for Mc prior to release.	Must be on water supply >180 days
Wallowa & Little Sheep	StS	56 & 29	Adult Spawners	Minimum of 60 per stock for culturable viruses using ovarian fluid and pyloric caeca/kidney/spleen sample pools not to exceed 5 fish per pool. - 10g egg samples from 30 females from each stock will be collected by Fish Health staff and flash-frozen at time of spawn for thiamine analysis.	Discontinue out-planting if IHNV prevalence ≥ 30%.
Wallowa & Little Sheep	StS	56 & 29	Adult Mortality as needed by Fish Pathologist	-Kidney smears on TYE-S agar - A maximum of 10 mortality (29 stock) examined and no more than 20 of 56 stock will be examined	
Lookingglass Creek	StS or Sp		Adults	-Mortalities examined by fish health staff, diagnostics employed per Fish Pathologist for culturable viruses, bacteria, *R. salmoninarum* by ELISA	The scope of what can be learned from these mortalities will depend on the degree of degradation.

Disinfections and Sanitation Guidelines
Specific Operational Recommendations

Applies to Who?	Prevention Control Measure or Sanitary Practice	Guideline Comment
All	Disinfect all gear/equipment prior to entering or leaving hatchery grounds	-As per attached iodophor protocol -Hatchery crew responsible for providing tub of 100 ppm iodophor
Hatchery Crew	Do not go from adult handling operations to juvenile operations activities unless all bib gear is thoroughly disinfected.	-As per attached iodophor protocol -it would be preferable to have bib gear designated for either adult or juvenile use.
Hatchery Crew	Pick mortality on a daily basis	-This is consistent with ODFW's statewide Fish Hatchery and Fish Health Management Policy.
All	Disinfect equipment when moving from raceway to raceway or tank to tank for <u>any</u> fish handling or pond cleaning activities	-As per attached iodophor protocol -Includes CWTing, fin clipping and PIT tag operations. See footnote for marking[a].
All	Use footbaths upon entering or leaving the work area for a given program	-Use larger tub of disinfectant if involved in a spawning
All	Use a new disposable apron or disinfected personal rain gear while working with fish	
CTUIR Personnel operations at Lookingglass Hatchery	Disinfect all gear/equipment prior to entering or leaving hatchery grounds, Lookingglass Creek, or the intake building and when done with operations at intake	-CTUIR personnel responsible to maintain and use a tub of 100 ppm iodophor at intake building workstation
Hatchery Crew	Assure that individual raceway and tank mortality "picker equipment" is in place at each raceway and tank	-All use these for the specifically designated Raceway
Hatchery Crew	Sanitize each raceway prior to use for the next brood year.	-Dry for a minimum of three days
Hatchery Crew	Keep footbaths located at strategic locations refreshed with disinfectant	-As per iodophor label, refreshed as needed or twice weekly
People at Spawns	Disinfect the spawning table and spawning work area between stocks and at the end of the day	-As per attached iodophor protocol
Research, Hatchery Crew & Fish Health Personnel	Handle and necropsy dead fish only in designated areas	-Store snouts only in adult mortality freezer -Juvenile morts: store in freezer in designated area for this purpose.
PIT taggers	-PIT tagging supervisors maintain and keep footbaths by each door of PIT tagging trailer for use during operations -Assure that PIT tagging needles are new or clean and sharp -Disinfect in 70% Isopropyl alcohol -No re-use of PIT tag needles until air dried	-If PIT tag needles are re-used disinfect as per isopropyl protocol
Lib Truck Operators	Assure proper disinfection of tank and equipment prior to collection or transfer of fish	-As per attached disinfectant application summary

Disinfection and Sanitation Guidelines
Summary of Recommended Disinfectants (Concentration and time) and for what Application

Disinfectant[b]	Application	Concentration	Time	Comment
Iodophor	Nets, gear and equipment, clipping & tagging van, PIT tag stations, large tub disinfectant containers, spawning colanders and buckets, lib truck, footbaths, floors Note: For raceway sanitization** – thoroughly clean the unit to remove dirt, spray or brush on 75-100 ppm iodophor and let this remain for a minimum of 10 minutes. Leave it to dry for a minimum of 3 days. Allow iodophor to dry and break down with exposure to light. **If the above recommendation cannot be done then sanitize raceways by thoroughly cleaning them and leaving to dry for a minimum of 3 days.	100 ppm Note: to make 100 ppm solution mix 6.7 oz of jug strength iodophor to 5 gallons H_2O or 6.7 oz.=189ml	10 min.	-Equipment should be pre-rinsed to remove dirt, mucus or other organic material which reduces the efficacy of disinfection and sanitization -Rinse equipment to remove harmful residue if equipment is going into standing water containing fish or fish are being placed into the equipment (tank or bucket). Remember that iodine at 1:20,000 is harmful to fish. -Argentyne or other buffered iodophors such as Western Chemicals "PVP iodine" would be acceptable. **Note: if DRAW 476 is used remember this product is 1.75% active iodine and unbuffered so should not be used for water- hardening eggs**
	Water hardening eggs	100 ppm	Minimum 15 minutes	This is the statewide general practice
	Egg transfers - disinfection at receiving station	100 ppm	10 minutes	
Virkon Aquatic	Footbaths, nets, boots & gear			As per label
Chlorine or Aqueous solution as sodium hypochlorite (Household Bleach)	Lib truck tanks Raceway disinfection	10 ppm 100 ppm	10 min.	Organic matter binds and neutralizes Left to dry and breakdown in sun. Need to assure that no bleach goes to effluent.

[a] Within a stock, operations will start with groups determined to be of lowest disease risk proceeding to raceways of higher disease risk. The latest fish health information should be used to determine the least risky raceway sequence.

[b] All chemical use will be done in accordance with label use and reporting requirements. Disinfecting and disinfected water must be disposed of in an approved manner.

Carcass Stream Nutrient Enrichment Health Guidelines

A. DEQ Fish Carcass Placement Guidelines 12/16/2022

1. Salmon and steelhead carcass placements are not to exceed 2,500 lbs./mile/year. Distributions should occur August through May, and they should not occur during times of extreme water flow or temperature events. Carcasses are placed in streams only when or

where they will not adversely impact water quality. Streams should be flowing when carcasses are distributed. Carcasses should be placed only within the wetted portion of the channel and in streams historically used by anadromous salmonids for spawning. Disease Control: Adhere to all applicable and current ODFW guidelines (see below).

B. ODFW Guidelines

1. For carcass stream enrichment programs, medication exposure and disease will be considered to avoid amplifying pathogens in the environment. The withdrawal period of medications must be met prior to carcass distribution. For a withdrawal period to be met, the fish must be kept alive for the entire duration of withdrawal days post exposure.

- **a.** Withdrawal period after MS-222 use: 21 days
- **b.** Withdrawal period after erythromycin injection: 60 days
- **c.** Withdrawal period after tulathromycin (Draxxin) injection: infinite (i.e. neither live fish nor carcasses can be placed in rivers)
- **d.** Withdrawal period after oxytetracycline injection: 21 days

2. Only fish that survive to spawning will be used, not mortalities.

3. Because *Myxobolus cerebralis* is endemic in wild fish and returning hatchery adults in the Imnaha and Grande Ronde watersheds, fish carcasses from these watersheds will not be transferred to other watersheds.

4. Before using carcasses for stream enrichment, freeze carcasses for 7 days at -20°C. If possible, carcasses will be frozen and saved until test results are obtained for virus (and *M. cerebralis*, if being tested). Freezing carcasses is beneficial as it reduces parasitic, viral, and bacterial loads overall, thus minimizing the risk of transmission to the native populations. If freezing is not possible, see guidelines below:

- **a.** If carcasses are to be distributed in the same stream and live adults of the same stock have already been distributed in that stream or exist there naturally, carcasses may be distributed as soon as they are available.
- **b.** If carcasses are to be moved to reaches of the originating watershed where adults are not normally present or to a different watershed:
    1. If there is no previous history of virus from the last 5 years, carcasses can be used unless virus is detected and exceeds 30%. If virus exceeds 30%, enrichment will stop.
    2. If there is a history of virus in the last 5 years, carcasses will not be distributed outside of the watershed in which the hatchery is located until tests are completed and <30% virus is detected (carcasses will have to be frozen and saved until tests are completed).

V. Grande Ronde Natural Population Monitoring

Summer Steelhead Monitoring: Catherine Creek/Grande Ronde River/Lookingglass Creek/

Goal - to monitor natural escapement and hatchery strays into natural production areas and collect basic life history information for management planning—No fish production goals.

A. Monitoring and Evaluations

1. **Adult Enumeration/Weir Collections**
   a. **Weir locations -** Catherine Creek (CC), and Lookingglass Creek (LGCR). The primary adult enumeration protocol for Joseph Creek (JC) will be through in-stream PIT array. CC weir is installed, operated, and maintained by CTUIR. LGCR weir installed and operated by ODFW and CTUIR. The upper Grande Ronde River weir site is not operated to capture steelhead.
   b. **Period of Trap Operation** – CC will be operated March 1 through August 1, environmental conditions permitting. Few steelhead are captured after mid-June. Lookingglass trap pickets may be pulled in May due to high run-off, but staff will attempt to operate from March 1 through the last Chinook spawning survey, but no later than September 30, to collect steelhead and spring Chinook. Lookingglass Hatchery crew notifies CTUIR screw trap personnel when pickets are pulled.

2. **Disposition of steelhead at weirs**
   a. **Catherine Creek and Lookingglass Creek Weirs**
      i. **Live, unclipped, first-time captures** – Enumerate, fork length, maturity, migration status, scales, sex, marks/tags, condition, take one opercle punch and pass above the weir (or below if kelt). All CC and LGCR fish will have scales collected. All steelhead will be scanned for CWTs and PIT tags. On Looknggglass Creek, the upper trap will remain open (with fyke removed) throughout the year to allow for volitional fish passage outside of established trapping periods.
      ii. **Live, unclipped, previously punched captures** - Enumerate, fork length, maturity, migration status, sex, marks/tags, and pass above the weir (or below if kelt). Note the number and position of existing opercle punches and the direction of capture (upstream or downstream).
      iii. **Live, clipped captures or clipped mortalities -** Enumerate, fork length, maturity, migration status, sex, marks/tags, condition. At CC and LGCR weir a single right opercle punch (1 ROP) will be taken to mark the fish and the tissue will be stored in a uniquely labeled envelope for later genetic analysis. All steelhead will be scanned for CWTs and PIT tags. At LGCR, steelhead will be euthanized and collect snouts if CWT present. If staff from both ODFW and CTUIR are present when the trap is checked, ODFW will euthanize them. If only CTUIR staff are present, any hatchery-origin fish will be put in a holding pen in the trap, ODFW hatchery staff notified, and ODFW will euthanize. At CC, steelhead will be released in the direction in which they were traveling (i.e. fish captured in the upstream trap box will be released upstream of the weir).
   b. **Weir/Trap Unclipped Mortalities - (First time captures at CC)** Enumerate, fork length, maturity, migration status, scales, sex, marks/tags, condition, take two opercle punches and take otolith. Return carcass to stream. (**Recaptures at CC**) – Enumerate, fork length, maturity, migration status, sex, marks/tags, condition, take ONE opercle punch and otolith. Return carcass to stream. (**First time capture or recapture at Lookingglass Creek)** Collect same biological data as for CC, but no additional tissue samples (another punch or otolith) need to be collected for recaptures on LGC. **Retain mortalities in freezer in labeled bag.** Collaborate with Fish Health when working dead fish at any of the three streams.
   c. **Lostine River Weir – From 2009 to 2024 the Nez Perce Tribe operated the Lostine River Weir to monitor for straying Wallowa Stock Hatchery Steelhead. Through this effort we**

concluded that hatchery steelhead do not stray into the Lostine River or do so at a negligible rate, and determined it was prudent cease adult steelhead monitoring using the Lostine River Weir.

B. Remote PIT Tag Array Monitoring

NPT and ODFW operate remote in-stream detection systems in the Grande Ronde basin year-round as part of a long-term monitoring effort. Information about PIT tag recapture information can be viewed at "www.ptoccentral.org/dbaccess/InStrmDtctn/InStrmDtctn_query.html". Grande Ronde Basin PIT Arrays, site code, and GPS locations include:

Key Contacts

1. CTUIR (McLean, Naylor). Distribute bull trout and steelhead data collected to ODFW District offices (Bratcher/Brandt).
2. NPT (Vogel, Simmons). Distribute bull trout and steelhead data collected to ODFW District offices (Bratcher/Brandt).
3. ODFW (Feldhaus, Faber). Distribute bull trout and steelhead data collected to ODFW District offices (Bratcher/Brandt)

VI. Imnaha Basin Natural Population Monitoring

A. Imnaha Weir Monitoring

Steelhead monitoring will be discontinued in 2025

B. Remote PIT Tag Array Monitoring

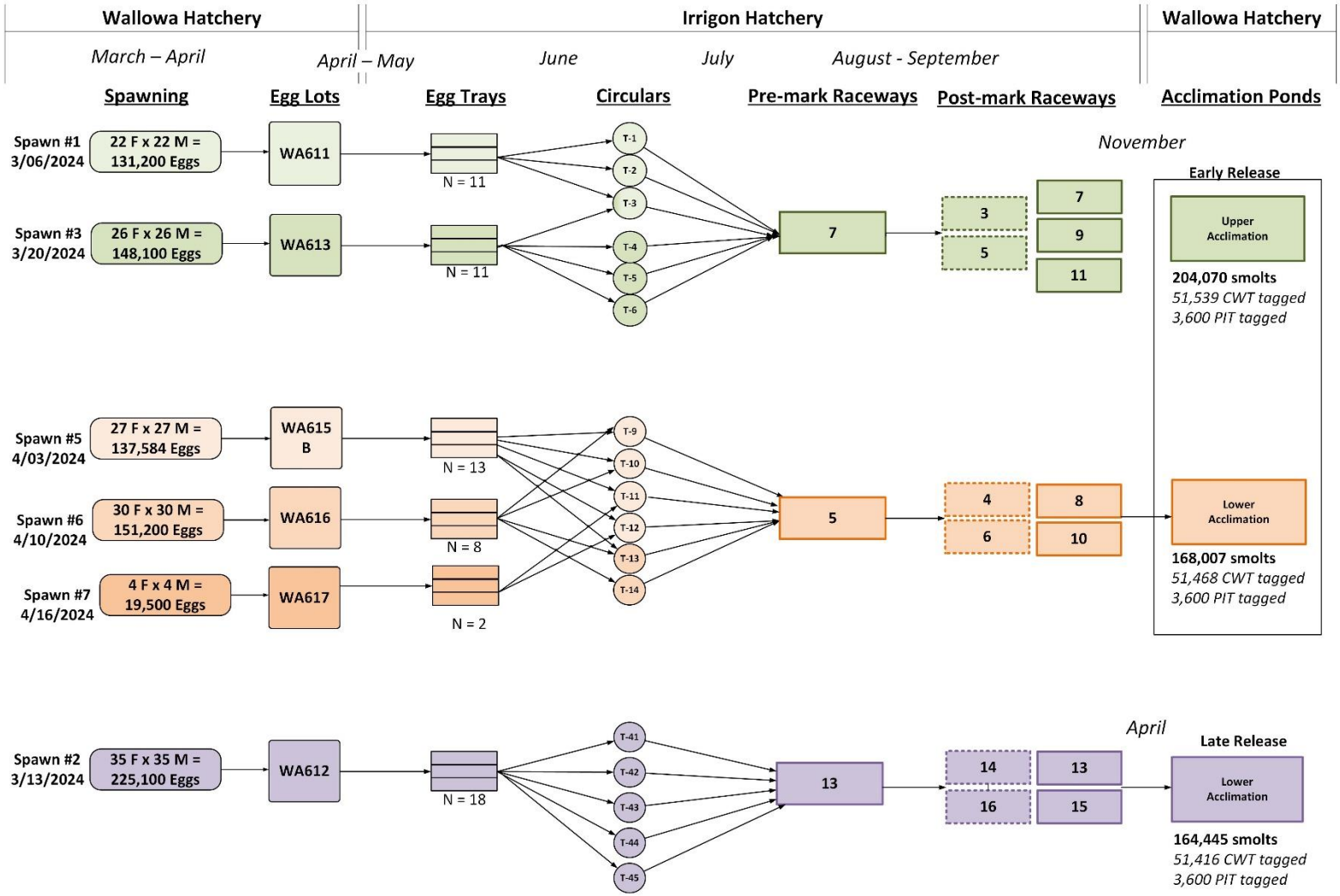
The Nez Perce Tribe operates remote in-stream detection systems in the Imnaha river basin as part of the larger Integrated Status Effectiveness Monitoring Project (ISEMP) to monitor juvenile and adult salmon and steelhead abundance. These PIT tag arrays will be operated year round and are part of a long-term monitoring effort. Information about PIT tag recapture information can be viewed at "www.ptoccentral.org/dbaccess/InStrmDtctn/InStrmDtctn_query.html". Imnaha Basin PIT Arrays, Site code, and GPS locations include:

C. Key Contacts

NPT (Vogel, Young, Simmons)

Appendix A. Parentage Based Tagging (PBT) tracking diagram for Brood Year (BY) 2024

WALLOWA HATCHERY STEELHEAD RELEASES
BROOD YEAR 2024



*This figure will be updated once genotyping results are received and PBT tagging rates can be calculated.

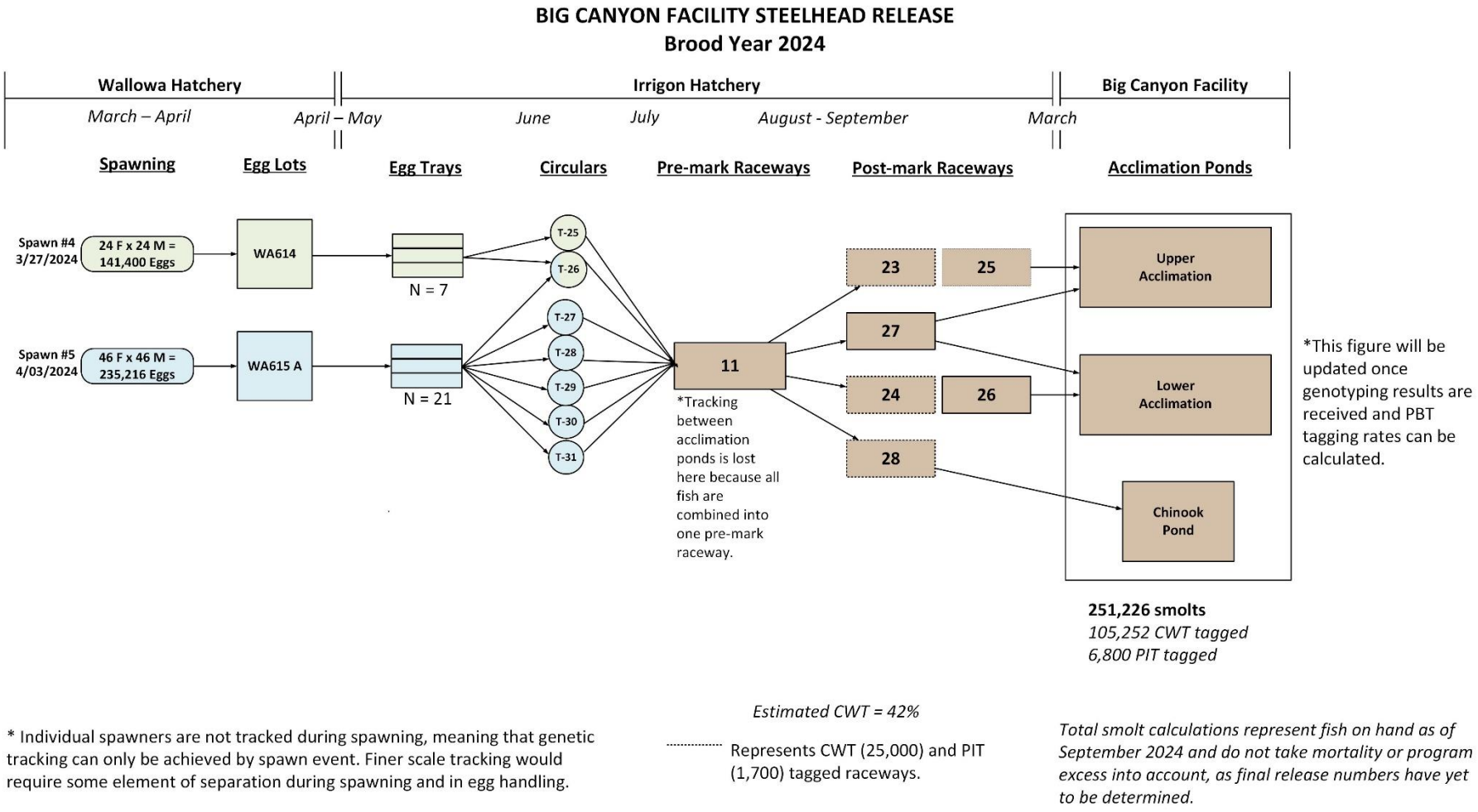
* Individual spawners are not tracked during spawning, meaning that genetic tracking can only be achieved by spawn event. Finer scale tracking would require some element of separation during spawning and in egg handling.

Estimated CWT = 29%

---------- Represents CWT (25,000) and PIT (1,800) tagged raceways.

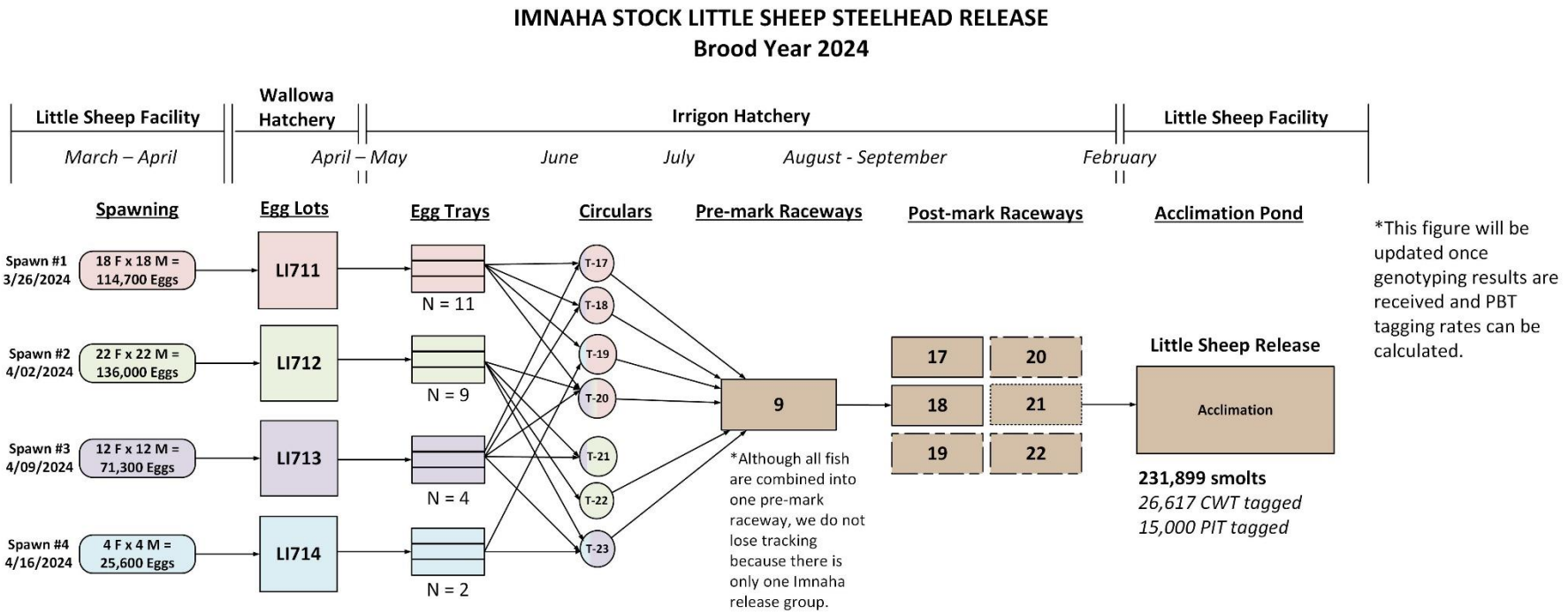
Total smolt calculations represent fish on hand as of September 2024 and do not take mortality or program excess into account, as final release numbers have yet to be determined.

Wallowa steelhead production released from the Wallowa Acclimation Ponds.



Appendix B. Parentage Based Tagging (PBT) tracking diagram for Brood Year (BY) 2024 Wallowa steelhead production released at Big Canyon.

Appendix C. Parentage Based Tagging (PBT) tracking diagram for Brood Year (BY) 2024 Imnaha steelhead production released at Little Sheep Creek.



* Individual spawners are not tracked during spawning, meaning that genetic tracking can only be achieved by spawn event. Finer scale tracking would require some element of separation during spawning and in egg handling.

Estimated CWT = 12%

..... Represents CWT (25,000) and PIT (3,700) tagged raceway.

— – – Represents PIT (3,700 – 3,800) tagged raceways.

Total smolt calculations represent fish on hand as of September 2024 and do not take mortality or program excess into account, as final release numbers have yet to be determined.